SEQUENCE LISTING

<110> Zhu, Zhenping
Witte, Larry

<120> Antibodies Specific to KDR and Uses Thereof

<130> 11245/46506

<140> To Be Assigned
<141> Herewith 03-18-2004
<150> US 09/976,787
<151> 10-12-2001
<150> US 09/493,539
<151> 01-28-2000
<150> US 60/117,726
<151> 01-29-1999

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Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
         35                  40                  45

Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Gly Tyr Ala Pro Lys Phe
     50                  55                  60

Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
 65                  70                  75                  80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
            100                 105                 110

Val Thr Val Ser Ser
        115
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<212> PRT
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Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
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            20                  25                  30

His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
         35                  40                  45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
     50                  55                  60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
 65                  70                  75                  80

Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
                 85                  90                  95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Ala
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Trp Ile Asp Pro Glu Asn Gly Asp Ser Gly Tyr Ala Pro Lys Phe Gln
 1   5   10   15

ggc
51
Gly
 17

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30
Ser Ala Ser Ser Ser Val Ser Tyr Met His
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21
Ser Thr Ser Asn Leu Ala Ser
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<400> 14

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27
Gln Gln Arg Ser Ser Tyr Pro Phe Thr
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<213> Mus musculus

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tca gtc aaa ttg tcc tgc aca act tct ggc ttc aac att aaa gac ttc
96
Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
20 25 30

tat atg cac tgg gtg aag cag agg cct gaa cag ggc ctg gag tgg att
144
Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

gga tgg att gat cct gag aat ggt gat tct ggt tat gcc ccg aag ttc
192
Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Gly Tyr Ala Pro Lys Phe

50 55 60

cag ggc aag gcc acc atg act gca gac tca tcc tcc aac aca gcc tac
240
Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
65 70 75 80

ctg cag ctc agc agc ctg aca tct gag gac act gcc gtc tat tac tgt
288
Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

aat gca tac tat ggt gac tac gaa ggc tac tgg ggc caa ggg acc acg
336
Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
100 105 110

gtc acc gtc tcc tca
351
Val Thr Val Ser Ser
115

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Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
5 10 15

gag aag gtc acc ata acc tgc agt gcc agc tca agt gta agt tac atg
96
Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30

cac tgg ttc cag cag aag cca ggc act tct ccc aaa ctc tgg att tat
144
His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
35 40 45

agc aca tcc aac ctg gct tct gga gtc cct gct cgc ttc agt ggc agt
192
Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60

gga tct ggg acc tct tac tct ctc aca atc agc cga atg gag gct gaa
240

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
65 70 75 80

gat gct gcc act tat tac tgc cag caa agg agt agt tac cca ttc acg
288
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
85 90 95

ttc ggc tcg ggg acc aag ctg gaa ata aaa cgg gcg
324
Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Ala
100 105

<210> 17
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide linker

<400> 17

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
5 10 15

<210> 18
<211> 45
<212> DNA
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<223> nucleic acid encoding peptide linker

<400> 18

ggt gga ggc ggt tca ggc gga ggt ggc tct ggc ggt ggc gga tcg
45
Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
5 10 15

<210> 19
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<212> PRT
<213> Artificial Sequence

<220>
<223> peptide linker

<400> 19

Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser
5 10

<210> 20
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> nucleic acid encoding peptide linker

<400> 20

ggt gga ggc ggt tca
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Gly Gly Gly Gly Ser
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<210> 21
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> peptide linker

<400> 21

Gly Gly Gly Gly Ser
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<210> 22
<211> 17
<212> PRT
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<400> 22

Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe Gln
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Gly
17

<210> 23
<211> 117

<212> PRT
<213> Mouse

<400> 23

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Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
             20                  25                  30

Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
         35                  40                  45

Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe
     50                  55                  60

Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
 65                  70                  75                  80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
            100                 105                 110

Val Thr Val Ser Ser
        115
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<210> 24
<211> 106
<212> PRT
<213> Mouse

<400> 24

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Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
  1               5                  10                  15

Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
             20                  25                  30

His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
         35                  40                  45

Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
     50                  55                  60

Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
 65                  70                  75                  80
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Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
85 90 95

Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 25
<211> 51
<212> DNA
<213> Mouse

<400> 25

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48
Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe Gln
1 5 10 15

ggc
51
Gly
17

<210> 26
<211> 351
<212> DNA
<213> Mouse

<400> 26

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48
Gln Val Lys Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Ser Gly Ala
1 5 10 15

tca gtc aaa ttg tcc tgc aca act tct ggc ttc aac att aaa gac ttc
96
Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
20 25 30

tat atg cac tgg gtg aag cag agg cct gaa cag ggc ctg gag tgg att
144
Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

gga tgg att gat cct gag aat ggt gat tct gat tat gcc ccg aag ttc
192
Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe
50 55 60

cag ggc aag gcc acc atg act gca gac tca tcc tcc aac aca gcc tac

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240
 Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
  65                  70                  75                  80

 ctg cag ctc agc agc ctg aca tct gag gac act gcc gtc tat tac tgt
288
 Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                 85                  90                  95

 aat gca tac tat ggt gac tac gaa ggc tac tgg ggc caa ggg acc acg
336
 Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
            100                 105                 110

 gtc acc gtc tcc tca
351
 Val Thr Val Ser Ser
         115


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 <212> DNA
 <213> Mouse

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 48
 Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
   1               5                  10                  15

 gag aag gtc acc ata acc tgc agt gcc agc tca agt gta agt tac atg
 96
 Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
             20                  25                  30

 cac tgg ttc cag cag aag cca ggc act tct ccc aaa ctc tgg att tat
144
 His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys Leu Trp Ile Tyr
         35                  40                  45

 agc aca tcc aac ctg gct tct gga gtc cct gct cgc ttc agt ggc agt
192
 Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
     50                  55                  60

 gga tct ggg acc tct tac tct ctc aca atc agc cga atg gag gct gaa
240
 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Met Glu Ala Glu
  65                  70                  75                  80
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gat gct gcc act tat tac tgc cag caa agg agt agt tac cca ttc acg
288
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser Tyr Pro Phe Thr
85 90 95

ttc ggc tcg ggg acc aag ctg gaa ata aaa
318
Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
100 105

<210> 28
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<212> PRT
<213> Mouse

<400> 28

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Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
20 25 30

Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Gly Tyr Ala Pro Lys Phe
50 55 60

Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
65 70 75 80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
100 105 110

Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
115 120 125

Gly Gly Gly Ser Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser
130 135 140

Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser
145 150 155 160

Val Ser Tyr Met His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys
165 170 175

Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg

180 185 190

Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg
195 200 205

Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser
210 215 220

Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys Arg Ala
225 230 235 240

<210> 29
<211> 238
<212> PRT
<213> Mouse

<400> 29

Gln Val Lys Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Ser Gly Ala
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Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
20 25 30

Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe
50 55 60

Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
65 70 75 80

Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
100 105 110

Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
115 120 125

Gly Gly Gly Ser Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser
130 135 140

Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser
145 150 155 160

Val Ser Tyr Met His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys
165 170 175

Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg
180 185 190

Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg
195 200 205

Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser
210 215 220

Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
225 230 235

<210> 30
<211> 720
<212> DNA
<213> Mouse

<400> 30

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Gln Val Lys Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Ser Gly Ala
1 5 10 15

tca gtc aaa ttg tcc tgc aca act tct ggc ttc aac att aaa gac ttc
96
Ser Val Lys Leu Ser Cys Thr Thr Ser Gly Phe Asn Ile Lys Asp Phe
20 25 30

tat atg cac tgg gtg aag cag agg cct gaa cag ggc ctg gag tgg att
144
Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
35 40 45

gga tgg att gat cct gag aat ggt gat tct ggt tat gcc ccg aag ttc
192
Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Gly Tyr Ala Pro Lys Phe
50 55 60

cag ggc aag gcc acc atg act gca gac tca tcc tcc aac aca gcc tac
240
Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
65 70 75 80

ctg cag ctc agc agc ctg aca tct gag gac act gcc gtc tat tac tgt
288
Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95

aat gca tac tat ggt gac tac gaa ggc tac tgg ggc caa ggg acc acg
336

Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
100 105 110

gtc acc gtc tcc tca ggt gga ggc ggt tca ggc gga ggt ggc tct ggc
384
Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Gly Ser Gly
115 120 125

ggt ggc gga tcg gac atc gag ctc act cag tct cca gca atc atg tct
432
Gly Gly Gly Ser Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser
130 135 140

gca tct cca ggg gag aag gtc acc ata acc tgc agt gcc agc tca agt
480
Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser
145 150 155 160

gta agt tac atg cac tgg ttc cag cag aag cca ggc act tct ccc aaa
528
Val Ser Tyr Met His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys
165 170 175

ctc tgg att tat agc aca tcc aac ctg gct tct gga gtc cct gct cgc
576
Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg
180 185 190

ttc agt ggc agt gga tct ggg acc tct tac tct ctc aca atc agc cga
624
Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg
195 200 205

atg gag gct gaa gat gct gcc act tat tac tgc cag caa agg agt agt
672
Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser
210 215 220

tac cca ttc acg ttc ggc tcg ggg acc aag ctg gaa ata aaa cgg gcg
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<212> DNA
<213> Mouse

<400> 31

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48
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tca gtc aaa ttg tcc tgc aca act tct agc ttc aac att aaa gac ttc
96
Ser Val Lys Leu Ser Cys Thr Thr Ser Ser Phe Asn Ile Lys Asp Phe
            20                  25                  30

tat atg cac tgg gtg aag cag agg cct gaa cag ggc ctg gag tgg att
144
Tyr Met His Trp Val Lys Gln Arg Pro Glu Gln Gly Leu Glu Trp Ile
        35                  40                  45

gga tgg att gat cct gag aat ggt gat tct gat tat gcc ccg aag ttc
192
Gly Trp Ile Asp Pro Glu Asn Gly Asp Ser Asp Tyr Ala Pro Lys Phe
    50                  55                  60

cag ggc aag gcc acc atg act gca gac tca tcc tcc aac aca gcc tac
240
Gln Gly Lys Ala Thr Met Thr Ala Asp Ser Ser Ser Asn Thr Ala Tyr
65                  70                  75                  80

ctg cag ctc agc agc ctg aca tct gag gac act gcc gtc tat tac tgt
288
Leu Gln Leu Ser Ser Leu Thr Ser Glu Asp Thr Ala Val Tyr Tyr Cys
                85                  90                  95

aat gca tac tat ggt gac tac gaa ggc tac tgg ggc caa ggg acc acg
336
Asn Ala Tyr Tyr Gly Asp Tyr Glu Gly Tyr Trp Gly Gln Gly Thr Thr
            100                 105                 110

gtc acc gtc tcc tca ggt gga ggc ggt tca ggc gga ggt agc tct ggc
384
Val Thr Val Ser Ser Gly Gly Gly Gly Ser Gly Gly Gly Ser Ser Gly
        115                 120                 125

ggt ggc gga tcg gac atc gag ctc act cag tct cca gca atc atg tct
432
Gly Gly Gly Ser Asp Ile Glu Leu Thr Gln Ser Pro Ala Ile Met Ser
    130                 135                 140

gca tct cca ggg gag aag gtc acc ata acc tgc agt gcc agc tca agt
480
Ala Ser Pro Gly Glu Lys Val Thr Ile Thr Cys Ser Ala Ser Ser Ser
145                 150                 155                 160

gta agt tac atg cac tgg ttc cag cag aag cca ggc act tct ccc aaa
528
Val Ser Tyr Met His Trp Phe Gln Gln Lys Pro Gly Thr Ser Pro Lys
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165 170 175

ctc tgg att tat agc aca tcc aac ctg gct tct gga gtc cct gct cgc
576
Leu Trp Ile Tyr Ser Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg
180 185 190

ttc agt ggc agt gga tct ggg acc tct tac tct ctc aca atc agc cga
624
Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg
195 200 205

atg gag gct gaa gat gct gcc act tat tac tgc cag caa agg agt agt
672
Met Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Arg Ser Ser
210 215 220

tac cca ttc acg ttc ggc tcg ggg acc aag ctg gaa ata aaa
714
Tyr Pro Phe Thr Phe Gly Ser Gly Thr Lys Leu Glu Ile Lys
225 230 235

<210> 32
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<220>
<223> leader peptide

<400> 32

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Val His Ser
19

<210> 33
<211> 57
<212> DNA
<213> Mouse

<400> 33

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48
Met Gly Trp Ser Cys Leu Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

gta cat tca
57
Val His Ser
19

<210> 34
<211> 19
<212> PRT
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<400> 34

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

Val His Ser
19

<210> 35
<211> 57
<212> DNA
<213> Mouse

<400> 35

atg gga tgg tca tgt atc atc ctt ttt cta gta gca act gca act gga
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Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Thr Ala Thr Gly
1 5 10 15

gta cat tca
57
Val His Ser
19

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<223> amplification primer

<400> 36

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<210> 37
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<220>
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tcgatctaga aggatccact cacgttttat ttccag
36

<210> 38
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<212> DNA
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<400> 38

ctagtagcaa ctgcaactgg agtacattca caggtcaagc tg
42

<210> 39
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<212> DNA
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<400> 39

tcgaaggatc cactcacctg aggagacggt
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<210> 40
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<212> DNA
<213> Artificial Sequence

<220>

<223> amplification primer

<400> 40

ggtcaaaagc ttatgggatg gtcatgtatc atccttttc tagtagcaac t
51